

ABSTRACT

A tube bundle apparatus for thermal exchange operations at high pressures and temperatures, under conditions of high aggressiveness of process fluids. The tube bundle includes a series of tubes whose internal wall includes a material selected from titanium, zirconium, or an alloy thereof, resistant to aggression of fluids, in which at least one of access chambers to the tube bundle is delimited by a wall including at least the following three metallic layers in succession: a) an external layer for tolerating pressure load, subject to corrosion by contact with the highly aggressive process fluid; b) an intermediate layer of stainless steel; (c) an anticorrosive lining in contact with the highly corrosive fluid, of a material selected from titanium, zirconium, or an alloy thereof. The apparatus can be particularly used as an exchanger/reactor, for example as a stripper, in the high pressure cycle of synthesis processes of urea.